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## **Influence of Sinogram-Affirmed Iterative Reconstruction on Computed Tomography-Based Lung Volumetry and Quantification of Pulmonary Emphysema**

Baumuellner, Stephan ; Hilty, Regina ; Nguyen, Thi Dan Linh ; Weder, Walter ; Alkadhi, Hatem ; Frauenfelder, Thomas

**Abstract:** **OBJECTIVE** The purpose of this study was to evaluate the influence of sinogram-affirmed iterative reconstruction (SAFIRE) on quantification of lung volume and pulmonary emphysema in low-dose chest computed tomography compared with filtered back projection (FBP). **METHODS** Enhanced or nonenhanced low-dose chest computed tomography was performed in 20 patients with chronic obstructive pulmonary disease (group A) and in 20 patients without lung disease (group B). Data sets were reconstructed with FBP and SAFIRE strength levels 3 to 5. Two readers semiautomatically evaluated lung volumes and automatically quantified pulmonary emphysema, and another assessed image quality. Radiation dose parameters were recorded. **RESULTS** Lung volume between FBP and SAFIRE 3 to 5 was not significantly different among both groups (all  $P > 0.05$ ). When compared with those of FBP, total emphysema volume was significantly lower among reconstructions with SAFIRE 4 and 5 (mean difference, 0.56 and 0.79 L; all  $P < 0.001$ ). There was no nondiagnostic image quality. **CONCLUSIONS** Sinogram-affirmed iterative reconstruction does not alter lung volume measurements, although quantification of lung emphysema is affected at higher strength levels.

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